Review Comments on the
Draft Source Control Evaluation Report
Brix Maritime Co.
Portland Oregon
Dated September 29, 2015

Submitted December 8, 2015

The following are U.S. Environmental Agency's (EPA's) comments from review of the Draft Source Control Evaluation, Brix Maritime Co., 9030 NW St. Helens Road, Portland, Oregon, ECSI No. 2364, (Report) dated September 29, 2015 prepared by Hart Crowser, Inc. on behalf of Brix Maritime Co. The Brix Maritime Co. site comprises approximately 4.5 acres and is located on the west side of the Willamette River at approximately River Mile 5.5. The site borders Sediment Decision Unit (SDU) River Mile 5 West (RM5W) of the Portland Harbor Superfund Site, which has primary chemicals of concern PAHs and pesticides (DDx).

EPA understands the objective of the evaluation activities were to determine the effectiveness of the upland source control measures. The evaluation involved collection and analysis of data related to stormwater, groundwater, overland, and erosion pathways to the river. The source control evaluation was performed pursuant to the request of the Oregon Department of Environmental Quality (DEQ) under the terms of the Voluntary Agreement for Remedial Investigation and Source Control Measures (No. LQDVC-NWR-02-03) between Brix Maritime Co. and DEQ.

General Comments

1. EPA recommends that DEQ consider requiring additional stormwater sampling to support effectiveness evaluations. Since the implementation of the 2012 source control measures (SCMs), there have been only two sampling events, which does not comply with the Portland Harbor Joint Source Control Strategy (JSCS) guidelines (refer to Specific Comment 3).

2. The Site Status Summary Table below summarizes the information presented in the Report including EPA's recommendations for the Brix Maritime Site. Based on the current information, EPA cannot determine whether SCMs are effective, and implementation of additional or more frequent SCMs may be necessary to reduce potential Willamette River recontamination impacts from this site. This recommendation is based on multiple lines of evidence including comparison of analytical results to Portland Harbor Joint Source Control Strategy (JSCS) Screening Level Values (SLVs) and the Portland Harbor Preliminary Remediation Goal (PRG) (as presented in the draft Final version released by EPA for stakeholder review in August 2015) values developed for Remedial Action Objectives (RAO) 3 and 7. However, this recommendation is contingent upon results of further stormwater sampling.

   The Report concludes that the erosion pathway is not complete and will not cause a current or future risk to the river. This conclusion is based on an evaluation of historical underground storage tank system releases on the Brix Maritime Co. upland. The Report is silent on the environmental condition of the 19 to 25 feet of fill material (mostly dredge sand fill placed on

native soils in late 1971). The presence of erodible soils of unknown environmental condition on the Brix Maritime Co. riverbank prevents EPA from concurring the erosion pathway is not complete.

EPA Site Status Summary – Brix Maritime Co.

Question	Answer	Description
Are source control measures being implemented?	Yes	Catch basin sediment removal (2008); Periodic catch basin inspection and filter replacement (since 2008); Stormwater conveyance system cleanout (2012); Parking lot maintenance and yard sweeping (Since 2012)
Are there JSCS SLV exceedances?	Yes	Catch Basin Sediment (2008, pre-SCMs): PCBs, phthalates, polycyclic aromatic hydrocarbons (PAHs) Stormwater (2012, post-SCMs): metals, *Bis*(2-ethylhexyl) phthalate (BEHP), PAHs
Are there stormwater PRG exceedances?	Yes	RAO 3: BEHP, PAHs RAO 7: Copper, BEHP (pre-cleanout), PAHs, zinc* *SCE report presented analytical results for total zinc, but PRGs for zinc are based on the dissolved fraction. Therefore it is uncertain whether zinc exceeded PRGs.
Are pollutant concentrations typical of Portland Harbor industrial sites (e.g. below the knee of the curve)?	Yes	With the exception of Total PAHs, which are above the knee of the curve for the CB-B Lower sediment samples, all other pollutant concentrations are below the knee of the curve.
Are stormwater COCs from this site the same as those defined for the associated SDU?	Yes	Primarily PAHs for adjacent SDU and metals are identified as a COC for the Willamette river.
Do sampled stormwater events meet JSCS criteria?	No	Refer to Specific Comment #3 below.
Is further stormwater data collection recommended?	Yes	Refer to Specific Comments #3 and #5 below.
Are additional source control measures recommended?	TBD	Contingent upon results of additional stormwater quality data.

Specific Comments

1. Section 4.1 Stormwater System Configuration:
    a. If portions of the property drain directly to the Willamette River via sheetflow (as opposed to draining to catch basins) this should be delineated in one of the figures and a more thorough discussion of activities and operations in these areas should be provided to determine whether stormwater characterization is needed.

b. Catchment area delineation, catchment area size, and runoff directions from all impervious surfaces including buildings should be provided in one of the figures and summarized in the text.

2. Section 4.3 Catch Basin Sediment Assessment: The Portland Harbor Upland Source Control Summary Report (prepared by DEQ and dated November 21, 2014) states that Total Petroleum Hydrocarbons (TPH), metals, and PAHs were identified in site soils and stormwater. However, the analytical program for catch basin sediment did not include testing for metals. Future catch basin sediment sampling should also analyze for appropriate metals to adequately characterize contaminants in stormwater solids. Arsenic, cadmium, chromium, copper, lead, manganese, mercury, vanadium, and zinc have been identified as constituents of concern (COCs) at the Portland Harbor Superfund Site and stormwater from the Brix Maritime site discharges to the Portland Harbor Sediment Decision Unit (SDU) River Mile 5 West (RM5W).

3. Section 4.4 Stormwater Discharge Collection: The JSCS guidance (Section D.2) states that a minimum of four storm events be sampled for screening purposes. Of these four stormwater sampling events, it is recommended that two be representative of "first flush" conditions (i.e. within the first 30 minutes of stormwater discharge) and the other two events should be collected within the first three hours of stormwater discharge.

   To adequately characterize effectiveness of the 2012 SCMs, a minimum of four storm events should have been sampled after these measures were implemented, and two of these storm events should represent "first flush" conditions. From the hydrographs in Appendix D, it does not appear that either of the storms sampled after implementation of the 2012 SCMs represent "first flush" conditions. The stormwater sampling guidance and storm event criteria in the JSCS were established to collect data that are representative of typical stormwater discharge. Since these criteria were not met, the stormwater results may not be representative, and additional stormwater sampling is recommended to determine the effectiveness of the 2012 SCMs.

   The methodology for estimating the onset of discharge during each storm event should be provided.

4. Section 4.5 Stormwater Analysis and Results:
   a. Stormwater SLV exceedances are reported for copper, lead, zinc, BEHP, and PAHs (fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene). The magnitudes of these SLV exceedances should be provided as stated in the JSCS to assist in evaluating the risk of Willamette River recontamination from stormwater discharges.

   b. The results of stormwater monitoring should also be compared to the PRGs for RAOs 3 and 7, which provide remedial action objectives related to surface water exposures.

   c. During the June 2012 sampling event, relatively high concentrations of metals and PAHs were observed. The analysis in Section 4.5.2 attributes these high concentrations to elevated levels of suspended solids (TSS) resulting from sediment displaced during the May 2012 conveyance system line cleaning. However, Section 4.2.2 states, "Except for

several roots encountered at joint connections, the conveyance lines were intact, and following the cleanout activities, were free of sediment and other debris." These statements are contradictory, and the explanation for the increased concentrations of metals and PAHs observed in June 2012 presented in Section 4.5.2 may not be accurate.

d. Stormwater samples were analyzed for total copper, lead, and zinc. However, SLVs for these metals are based on the dissolved fractions, making direct comparisons inappropriate. The PRGs for zinc is also based on the dissolved fraction. Future stormwater samples should also be analyzed for the dissolved fractions of these metals to enable direct comparisons to SLVs and PRGs.

e. While DEQ's 1200-Z stormwater permit recommends the use of geomeans for analyzing stormwater data, individual data points should also be presented to illustrate the range of concentrations observed at the Brix Maritime site. In addition, collection of only two samples is insufficient for evaluating SCM effectiveness and additional stormwater sampling is recommended.

5. Section 4.6 Summary of Activities and Findings: This section states that "chemical results indicate the 2012 SCMs were effective at reducing COIs in stormwater." However, as discussed in Specific Comment #3, the stormwater sampling events did not meet all JSCS criteria and results may not adequately represent stormwater discharge from the Brix Maritime site. Additional stormwater sampling may be necessary to adequately characterize stormwater discharges.

6. Section 6.2 Surface Conditions: This section describes two erosion areas on the riverbank that have resulted in scarps exposing erodible soils. Given that the environmental condition of the Brix Maritime Co. riverbank is apparently unknown the erosion scarps should be sampled and analyzed for COCs for the Portland Harbor Superfund Site. The figures should also identify the location of these erosion areas. The Portland Harbor PRGs as presented in the draft Final version released by EPA for stakeholder review in August 2015 should be consulted. RAO 9 pertains specifically to riverbanks with the goal of reducing migration of contaminants of concern in riverbanks to sediment and surface water such that levels are acceptable in sediment and surface water for human health and ecological exposures.

7. Appendix D: Sediment Figures in Appendix D should clarify the meaning of 'Upper' and 'Lower' samples. This information can be found within the text, but the text does not refer to these figures. This information should be presented directly in the figures for clarity. While DEQ's 1200-Z stormwater permit recommends the use of geomeans for analyzing stormwater data, individual data points should also be presented in the figures to illustrate the range of concentrations observed at the Brix Maritime site.